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IC 78-5217

17 JUN 1978

MEMORANDUM FOR: Under Secretary of the Air Force
Director, National Security Agency
Director, State/INR
Director, Defense Intelligence Agency
Director, National Foreign Assessment
Deputy Director for Administration
Deputy Director for Science and Technology
Deputy Director for Collection Tasking

25X1A FROM: [redacted]
Deputy to the DCI for Resource Management

SUBJECT: Civilian Space Policy

1. (C) The President has asked that Dr. Frank Press, the President's Science Advisor, convene the NSC Space Policy Review Committee (SPRC), established recently under NSC/PD-37, to prepare by 1 September an interagency civilian space policy options paper (see Attachment 1). A meeting of the SPRC to discuss the Presdent's instructions and resolve the issue that will set the dimensions of the review is scheduled for 21 June. The policy options will be subsequently addressed by seven proposed interagency task forces (see Attachment 1, Tab B).

2. (S) The issues to be addressed are:

Title	DCI Interest	DCI Membership on Task Force
I. Strategy to Utilize the Shuttle	High	Yes
II. Strategy for Space Sciences and Planetary Exploration	Low	No
III. Government and Private Role in Remote Sensing	Low/Moderate	Yes
IV. Public Service Satellites and Communications R&D	Low/Moderate	No
V. Long-Term Economic Activity in Space	Low	No

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SUBJECT: Civilian Space Policy

VI. Separation Between Civil, Military, and National Intelligence Space Programs	High	Yes
VII. Expression and Public Statement of Administration's Broad Policy Goals	Moderate	Yes

3. (C) I am establishing an intelligence community working group to prepare community positions on the issues and coordinate on the issues as they arise. Members of this working group will also serve on the SPRC interagency task forces as appropriate. I request that you nominate a representative to this working group who will also be available to serve on one of the interagency task forces, if required. Please forward the name of your representative to the chairman of this group, [redacted] (376-5544, secure 3-1276) by COB, 19 June.

25X1A

4. (U) Additional background material on the civilian space policy issues is attached (see Attachment 2).

[redacted]

25X1A

Attachments:
1. Civilian Space Policy
2. Civil Space and Aeronautics Policy

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Distribution:
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1 - DCI
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Remarks: To 3: For review and recommendation to DCI.

STATINTL

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3637 (4-78)

13 Jun 78
Date

THE WHITE HOUSE

WASHINGTON

June 13, 1978

MEMORANDUM FOR: The Secretary of State
The Secretary of Defense
The Secretary of the Interior
The Secretary of Agriculture
The Secretary of Commerce
The Secretary of Energy
Director, Office of Management and Budget
Assistant to the President for National Security Affairs
Assistant to the President for Domestic Affairs
Administrator, Agency for International Development
Director of Central Intelligence
Administrator, National Aeronautics and Space Administration
Director, National Science Foundation

FROM: Frank Press FP

SUBJECT: Civilian Space Policy

At the NASA Spring Review session and during meetings with key Congressional leaders, the President asked that I assess the needs to be met by the nation's space programs. This assessment will be the first order of business under the NSC Space Policy Review Committee (SPRC) established recently under NSC/PD-37. The President has asked the SPRC to submit an interagency policy options paper to him by September 1, prior to the fall budget cycle.

The President has asked that the options paper address policy elements that include:

-- A strategy to utilize the Shuttle capability by all three space sectors, including better flow of technology across sector boundaries for optimal use of the Shuttle in design and development of all satellite systems.

-- A strategy for space science and goals for planetary exploration for the next decade.

-- An assessment of the government's role in remote sensing (e.g., organizational arrangements to further exploit remote sensing data and arrangements to encourage private sector involvement in sensing.

-- An evaluation of public service satellites services and communications R&D.

-- An assessment of the government's role in long-term economic activity in space (e.g., solar power satellites and space industrialization).

-- An evaluation of whether the separation between civil, military, and national intelligence space activities should be continued or whether there should be more joint activity in space.

-- An expression of the Administration's broad civil space policy goals (including a possible statement for public release), taking into account our domestic and foreign policy posture, cooperation, competition, national security, and budgetary constraints.

The first SPRC meeting will be held in the Roosevelt Room, 1-2:30 p.m., on June 21. We will discuss the President's instructions and resolve the issues that will set the dimensions of the review. Agency participation will be at the principal or deputy level, plus one. At Tab A are the issues that reflect the above policy elements the President asked that we address. At Tab B are proposed task forces and designated agency leads. Please inform Karla Will (395-5736) of your attendees by noon June 20.

SPACE POLICY ISSUES

I. Strategy to Utilize the Shuttle Capability

Issue #1--What should be the US strategy to effectively utilize the Shuttle by all space sectors, including the better flow of technology between sectors?

Possible options and questions that need to be examined include whether to gradually reduce reliance on expendable launch vehicles as currently planned or increase earlier reliance on Shuttle capability with the first successful test, so as to reduce the redundancy requirement. Likewise, the space-related capabilities required to effectively utilize the Shuttle for specific national needs (currently projected) will have to be examined; e.g., increased orbital staytime, increased maneuverability, or other new space capabilities.

II. Strategy for Space Sciences and Planetary Exploration

Issue #2--What are the overall program strategy options for space science and planetary exploration for the next decades?

Questions that need to be evaluated include: how best to advance our knowledge in the space sciences; whether, for example, to focus on astrophysical sciences or stress solar-terrestrial activities; or whether to consider experiments that require large structure development. A planetary exploration strategy will have to take into account the relative priorities of new planetary starts to explore the terrestrial planets, astroids, and comets. Whether or not to include a Mars sample return mission, for example, will have to be addressed. Space science and planetary exploration will need to be justified and fitted into budgetary constraints. Whether or not to stress further international cooperation with additional emphasis on sharing the costs needs to be considered.

III. Government and Private Role in Remote Sensing

Issue #3--What are the organizational questions that need to be addressed to further exploit civil remote sensing capabilities?

Possible options and questions that need to be addressed include: whether to continue present arrangement with NASA sustaining lead agency responsibility for civil remote sensing R&D with the user agencies responsible for data processing and distribution; whether to establish a Federal Survey Administration, for example, that would operate and aggregate remote sensing requirements across the board; or whether and how to encourage user agencies to operate and determine what technologies and systems should be advanced to meet their individual requirements. Of course, the budget and possible financing arrangements of these various approaches must be addressed.

Issue #4--How should the US proceed with remote sensing capabilities developed under LANDSAT and other remote sensing activities?

Possible approaches would include: to continue experimentation in a limited R&D environment with a commitment to continuity of data services at least through 1985; or to declare the undertaking of a full-scale operational demonstration program for a period of 10 years with a decision on operational status by 1985. Specifically, the various modes of transition of LANDSAT from R&D to operational status need to be examined. Likewise, how to respond to initiatives of the US private sector for involvement in remote sensing needs to be evaluated and various alternatives considered.

IV. Public Service Satellites and Communications R&D

Issue #5--Should the US facilitate public service satellite services for domestic as well as international assistance programs, and what should be the US Federal role in space communications R&D?

Whether to refrain from entering into public service satellite programs at this time or to establish US government public service satellites for domestic and for international development assistance programs to be managed by NASA needs to be considered. In communications R&D the apparent options of retaining only enough Federal competence to support regulatory requirements--relying on industry to invest in new capabilities--or reentering the field by the Federal government should be examined. At question is how best to assure an effective technology base for future telecommunications services.

V. Long-term Economic Activity in Space

Issue #6--What should the US government's role be in space industrialization?

Whether to leave the responsibility of space manufacturing to the private sector until we have a better understanding of the economics or to encourage space manufacturing development through joint government/industrial financial support are at issue. In this connection whether to continue our present pace with respect to solar power satellites pending completion of ongoing feasibility study or whether to establish a more comprehensive technology readiness program in concert with industry at the sub-system level will have to be assessed. Likewise, any direct government requirements for space industrialization need to be considered.

VI. Separation Between Civil, Military, and National Intelligence Programs

Issue #7--Should the US continue to maintain the separation between civil, military, and intelligence programs?

Whether or not to maintain present arrangements with the three sectors developing and operating distinctively separate programs should be reexamined. How to coordinate for greater efficiency and reduce barriers between the three sectors, in keeping with maintaining security, will have to be addressed.

VII. Expression and Public Statement of Administration Broad Policy Goals

Issue #8--How should this Administration express its broad civil space goals and direction?

The products of previous task forces will be combined into an expression of this Administration's broad space goals and direction. The overall space goals will be established first, then tailored to fit the context of budgetary constraints. Likewise, whether or not a public statement or space policy speech should be made will have to be evaluated. Specific attention needs to be given to considering how space goals can be expressed that do not restrict the President's needs for flexible budget options year by year.

FUTURE SPRC ISSUES

A. Aeronautical R&D. OSTP and OMB are currently working with Transportation, Defense, and NASA to establish a rationale for our civilian aeronautical program. This review will be submitted to the SPRC for consideration on completion.

B. Navigational Systems. OMB, Commerce (OTP), Transportation, NASA, and Defense are examining whether or not to establish NAVSTAR as the primary navigational satellite system for both military and civil users. This review will be submitted to the SPRC for consideration on completion.

C. Remote Sensing Internationalization. In the future when a US review concerning the various alternatives for internationalization of remote sensing is needed, it will be undertaken by the SPRC.

SPACE POLICY TASK FORCES

I. Strategy to Utilize the Shuttle

Members: NASA, Defense, DCI, Commerce, OMB, NSC, OSTP

Cochairmen: Defense/NASA

II. Strategy for Space Sciences and Planetary Exploration

Members: NASA, NSF, OMB, OSTP

Chairman: NASA

III. Government and Private Role in Remote Sensing

Members: NASA, Interior, Agriculture, Commerce, State, AID, Defense, DCI, OMB, NSC, OSTP

Cochairmen: NASA/Commerce

IV. Public Service Satellites and Communications R&D

Members: NASA, Commerce, Interior, State, AID, Defense, OMB, OSTP

Cochairmen: NASA/Commerce

V. Long-Term Economic Activity in Space

Members: NASA, Commerce, Energy, State, OMB, OSTP

Cochairmen: NASA/Energy

VI. Separation Between Civil, Military, and National Intelligence Space Programs

Members: Defense, NASA, State, DCI, Commerce, NSC, OMB, OSTP

Chairmen: DCI/NASA

VII. Expression and Public Statement of Administration's Broad Policy Goals

Members: White House drafting group drawing on task force products; NASA, Defense, State, DCI, Commerce, Agriculture, Interior, AID, OMB, Domestic Council, NSC, OSTP, NSF

Chairman: OSTP

TAB

Approved For Release 2002/01/24 : CIA-RDP81-00142R000100130023-5

15 MAY 1978

MEMORANDUM FOR: Director of Central Intelligence

25X1A FROM: [redacted]
Deputy to the DCI for Resource Management

SUBJECT: Civil Space and Aeronautics Policy (U)

1. Action Requested: (U) That you sign the attached memorandum to Dr. Frank Press.

2. Background:

a. (U) The subject memorandum on civil space and aeronautics policy (see Attachment A) was prepared by White House staffers under the direction of Frank Press, the President's Science Advisor. We did not participate in its preparation.

b. (S) The issues raised in this memorandum relate only to civil space policy and have only peripheral impact on the intelligence community. A summary of the issues, the decision options, and some of the pertinent factors relating to intelligence community impact is at Attachment B. Affected factors of interest to us include: the future of the space shuttle, the extent of the intelligence support we will have to provide to NASA, the extent of intelligence space data and technology to be supplied to NASA and other government agencies, the amount of remote sensing data that NASA will be able to provide to the intelligence community for economic intelligence, the extent of and controls applied to private-sector participation in remote sensing, and the resolution limits to be placed on civil remote sensing data.

c. (U) I have requested comments from NFIB member agencies. My request and the replies received to date are at Attachment C. Comments were also received by telephone. No strong opinions were expressed by any of the NFIB member agencies.

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SUBJECT: Civil Space and Aeronautics Policy (U)

d. (C) The memorandum to Frank Press points out that we have not had sufficient time to analyze the alternatives presented and suggests that it is premature to request presidential decision at this time. Anticipating that the issues will nevertheless be presented to the President, the memorandum endorses the status quo alternative on all issues that may have some effect on the intelligence community.

3. Recommendation: (U) That you sign the attached memorandum to Dr. Frank Press.

/S/ [redacted]

25

Attachments:
A. Dr. Press Memo dtd 8 May 78
B. Summary of Issues
C. Request for Comments
D. Response to Dr. Press

Distribution:

Orig - Addressee w/atts
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1 - OPEI/CAD subj file w/atts
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25X1A 1 - [redacted] chrono "
1 - RM/CT Registry "

25X1A ICS/OPEI/CAD/[redacted]:cr x1276 (15 May 78)

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		Date			

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Remarks:

25X1A

[redacted]

Executive Secretary

9 MAY

Date

3637 (10-77)

THE WHITE HOUSE

WASHINGTON

May 8, 1978

MEMORANDUM FOR: Administrator, National Aeronautics and Space Administration
Secretary of State
Secretary of Defense
Secretary of Commerce
Secretary of Agriculture
Secretary of Interior
Secretary of Energy
Director, Central Intelligence Agency
Administrator, Agency for International Development
Assistant to the President for National Security Affairs
Director, Domestic Policy Staff
Director, Office of Management and Budget

FROM: Frank Press FP

SUBJECT: Civil Space and Aeronautics Policy

The President has asked me to develop and circulate for your comment a civilian space policy paper. The attached paper draws on the recently completed PRM-23 and provides the President the opportunity to publicly describe civilian space and aeronautical policy.

I would appreciate your comments on the attached paper by May 15. Where you feel appropriate, please indicate your support under the various issues so that your position can be made known to the President.

CIVIL SPACE AND AERONAUTICAL POLICY

A. Broad Direction

The major directions in our space program have been prescribed by Presidential mandate and by legislation. They set the space environment of today. President Eisenhower initiated space exploration. President Kennedy set the national goal of placing a man on the moon in the 60's. The future space transportation system--the Shuttle--was an initiative of President Nixon's.

In 1978, the US civilian space program is at the threshold of change. It is acquiring new capabilities, but it needs direction and purpose. Decisions made now will set the goals and dimensions of our civilian space program for the next decade. With the run out in major Shuttle expenditures, the opportunity exists to set the US scope and direction in space for the remainder of this century. Options become available to give any new impetus to space applications, to space science, to planetary exploration ventures; options will also be available to continue these programs at present levels or to contract them. However, to focus the US on a high challenge, high visibility major new national space initiative does not seem feasible within any projected budget envelope or the technological opportunities on the immediate horizon. That direction does not have support in the Executive Office of the President or in the cognizant agencies and departments.

A resurgence of domestic interest in space exploration and utilization has been evidenced by extensive press and popular fascination with the Shuttle. This interest has been reflected also in the some eight million visitors annually to the Air and Space Museum. Congressional support for an innovating space program has been reflected in strong budgetary support. On the other hand, other demands on Federal expenditures in the social and defense areas also have strong advocates. All this comes at a time when the growth of overall expenditures must be reduced.

Space will increasingly become an area of international competition. The European Space Agency's Ariane launch vehicle will be available in 1979. The Japanese have announced an encompassing 15-year space program. Together, the Europeans and Japanese will provide the major competition to the US for the space commercial market. The USSR, on the other hand, is the primary US space competitor in national security systems, in space exploration, and increasingly in areas of potential economic value. The Soviets place considerable emphasis in space on national prestige building. As such, the Soviets sustain a highly visible manned space program--integrated with their military program--and launch some 100 satellites per year. Technologically, US satellites are more sophisticated--e.g., longer lifetime in orbit--than Soviet systems and the US therefore needs to launch fewer satellites per year (33 in 1977). In the long term, the Soviets will strive toward equivalence with the US in space technology, or at least the perception thereof.

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The NSC study, PRM-23, A US Coherent Space Policy, has set forth for your approval our national policies on many space issues and on the interrelationship between the civilian, military, and national intelligence sectors. However, the civilian space direction was not articulated in any detail; it is now most appropriate for this Administration to consider our broad civil space direction.

To provide a framework for your decisions, this paper sets forth issues for decision in the following areas: a) broad policy direction, b) the government's role as interim manager for space applications, c) specific space application issues, d) aeronautical R&D, and e) articulation of space policy and goals. In reviewing these issues you should keep in mind that the space program should not be considered as an end in itself, but rather as a means of meeting many different national objectives.

Issue #1--How should this Administration express its broad civil space policy direction?

The civil space program has been reduced significantly since the days of the Apollo program--from over $12 billion in FY 1966 (in comparable 1979 dollars) to $4.4 billion in FY 1979. Although the overall program planning is being redirected toward space sciences and space applications, the Shuttle development now nearing completion accounts for roughly half of the total NASA budget. In the 1982-1985 time period there is therefore the prospect of substantial reduction in the space budget, a redirection of resources after completion of the Shuttle toward other space activities, or the expansion of level of effort in pursuit of a new technological thrust. While many variations are possible, we have simplified the analysis by choosing three logical and differing options regarding level of effort:

Option 1--Reduce systematically overall expenditures in the civil space program. Consider space as a conquered frontier for the near term and less important to the human future than alternative uses of similar Federal resources. Pursue a modest science and planetary program at about the present level or somewhat less. Practical space applications will be maintained at the present level or less, but shift increasing responsibility to the private sector on the basis of expected return.

Option 2--With the run-out of the Shuttle development costs, use the released funds to initiate new starts in science, applications, and exploration when justifiable on their intrinsic merit. This overall program direction will be constrained to a level of effort not to exceed the current budget (allowing for inflation).

Option 3--Increase overall expenditures on space programs and consider favorably major new starts in planetary exploration, space sciences, applications, and technological initiatives.

Under Option 1 the US would reduce the level of support to the space program across the board. We would stretch out astrophysical science programs and concentrate only on certain solar-terrestrial activities of

more relevance to practical activities on earth. The frequency of space lab missions would decrease. In the planetary area the emphasis would be on reduced rate of exploration, e.g., Venus radar and comet encounter missions would be deferred some 3-5 years--Saturn exploration would be deferred a decade. Decisions would be based largely on the fiscal outlook and to a lesser extent on the formulation of a longer-term planetary exploration strategy. Under this approach we would continue on-going programs in NASA and Defense to make the Shuttle vehicle a capable space transportation system but only initiate those post-Shuttle development programs necessary to sustain a minimal space science and planetary exploration program which would avoid surrendering the field to the USSR. In the applications area we would focus primarily on research activities in remote sensing and communications and leave most operational applications to the private sector or to Federal agencies with specific mission applications. In areas such as solar power satellites and space industrialization efforts would be maintained as studies only. Aeronautical R&D would emphasize long-term research.

The advantages of Option 1 are: a) perhaps $1.0-1.5 billion budgetary savings could be made over a period of time; b) space applications would have to show potential economic feasibility before being pursued and as such may encourage industry to undertake a somewhat more aggressive program; c) space has received considerable support in the past and could afford to be reoriented so a lesser percent of Federal R&D funding would be directed toward space while maintaining minimal space science, planetary exploration, and basic R&D programs; d) given the immense front-end costs of solar power satellites and space industrialization, even preliminary sub-systems R&D would be precluded.

The disadvantages of Option 1 are: a) it would not be responsive to growing Congressional and perceived domestic support and interest in space; b) the US would diminish or forego the international prestige gained from space; d) our economic advantage in space would be increasingly shared with our foreign industrial competitors; e) this Administration would be viewed as dismantling NASA and as such the US preeminence in space; e) the Shuttle's capability for aggressive exploration in space would not be cost effective; and f) in view of the recent high visibility, high launch rate program of the USSR, the US would be perceived as relinquishing space superiority to the Soviets.

Under Option 2 we would continue to shift our civilian space emphasis to applications, space sciences, and planetary exploration using the funds released by the run-out of Shuttle costs. The NASA budget would not exceed its present 1.0 percent of the Federal budget, and the actual budget would depend on the quality and utility of the proposed projects. Under this approach, NASA would maintain the primary responsibility to evaluate and propose new program starts to fit within the fiscal framework and the guidance on policy issues in this paper.

In the planetary area we could emphasize exploration of the solar system, the asteroids, and the comets over the next decade, but defer large projects, for example, a Mars sample return mission until the 21st century. Significant planetary exploration--Venus radar mission in 1983, comet rendevous in 1987 and a Saturn mission in 1988--would be undertaken. In the space sciences we

would maintain the current level of activity and focus on the highest priority space science objectives in the astrophysical and solar-terrestrial areas, including 2-4 missions per year using the jointly-funded US-European space lab. In space applications the option to move toward operational (rather than R&D) satellites remains open; however, we would defer, for the present, any initiatives in public service communications satellites. In remote sensing, we would continue to make improvements in information systems such as LANDSAT. Under this approach we would more fully exploit and enhance the Shuttle capabilities, e.g., increase the orbital stay-time and available power; increase maneuverability in response to science and applications requirements; and explore space fabrication and assembly.

With Option 2, economic exploitation of space could be pursued at a modest pace involving small R&D projects in concert with industry; in areas such as solar power satellite and space manufacturing development, there would be no commitment to the initiation of these applications without consideration of all national priorities and the economics of the applications. In general, aeronautical R&D would remain at about the current level, with the option left open for some redirection to emphasize demonstration as well as research.

The advantages of Option 2 are: a) provides a significant direction to the space program, and with it gives this Administration the credit--domestically and internationally--for sustaining US world leadership in space; b) would concentrate financial resources in applications, with less emphasis on technological and engineering projects involving the techniques of large-scale fabrication and manipulation in space; c) would be responsive--within fiscal constraints--to resurgence of Congressional and domestic interest in space; d) would join government with industry in partnership to exploit the benefits of space for mankind; f) if R&D indicates that delivery of energy from space turns out to be economically competitive this Administration would be recognized for initiating the preliminary R&D; g) would continue the US momentum in space sciences and exploration and as such provide for a significant program.

The disadvantages of Option 2 are: a) the opportunity would be reduced to transfer funds to other pressing national needs; b) would be viewed by space advocates as a retraction from major new space opportunities; c) NASA is good at large engineering efforts (e.g., the Shuttle and Apollo programs) and would not be able to usefully exploit that capability; d) even if economic feasibility of large structures in space or solar power satellites is undemonstrated, the momentum or the modest R&D programs of this option would be hard to stop; e) this policy could be criticized for initiating space starts more to expend available resources than because of their own merit; f) advanced communications technology would not be available for non-commercial public services.

Under Option 3 we would expand our space program substantially. In general, a greater percentage of the Federal budget could be earmarked for space--e.g., up to 1.5 percent. We would undertake the initiatives described in Option 2, plus additional programs. In the space science areas we could initiate earlier than otherwise, for example, an x-ray telescope for astrophysical

research and increase our solar-terrestrial activities. Space science experiments which require development of large structures would be pursued. Our planetary activities could increase emphasis on exploring all the planets, the asteroids, and comets. A Mars sample return, for example, could be added. In applications we could place more emphasis on NASA-operated systems; i.e., LANDSAT, and SEASAT, and public service communications satellite systems.

Under this approach we would begin evolutionary development of new space systems capabilities--next generation launch and orbital transfer vehicles and space habitats--to lay the ground work for possible expansion of civilization and industrialization in space. We would commit in concert with industry to a solar power satellite demonstration project--an operational but not necessarily economically competitive system. A public service satellite program for domestic and international assistance programs would be established. In the aeronautical area, we could move to emphasize demonstration projects, while continuing longer-term R&D.

The advantages to Option 3 are: a) space would receive greater emphasis, responsive to a perceived Congressional and domestic public interest in space; b) there would be potential for economic stimulation in both jobs and new industries (the Shuttle development and construction provides some 20,000 jobs); c) space could be described as the new frontier for this Administration; d) new space services could be available more rapidly; e.g., as in satellite communications 15 years ago; e) this Administration would receive the domestic and international credit for sustaining the US pre-eminent power in space for the good of all mankind; f) with such a Federal effort, the private sector would be stimulated to follow in such areas as public service satellites.

The disadvantages to this approach are: a) would be costly in terms of a constrained budget; b) such an extensive program would likely exceed the proscribed budgetary limit; c) this Administration could be accused of misplaced priorities; d) it is premature to push the technology in solar power satellites and space industrialization--the front-end costs are huge; and e) the direct economic benefits of such a broad space initiative would be primarily to the aerospace community.

B. US Government Role As Interim Manager in Space Applications

The US has derived many benefits from civil and military space applications. The benefits have served national defense, foreign policy, and economic objectives. The US pioneered the development of space applications technology--communications, navigation, remote sensing. Not all have been fully developed in an economic sense. Issues remain about the optimal design of these technologies and the likely economic benefits in relation to costs. Furthermore, there are questions as to the institutional structures which would be most appropriate for further space applications, both nationally and internationally, and in both the private and public sectors. The decisions, in part, depend on evolution of technologies with many unknowns, thus making clear-cut choices difficult in some cases.

The basic role of NASA in space is research, development, and demonstration. To date, NASA has not played a formal operational role in civilian satellite systems, some of which have been operated by mission agencies or the private sector--NOAA for weather satellites and COMSAT and other private sector entities for communications satellites. In the case of both communications and meteorology satellites operators were selected after NASA opened the fields. The other agencies of the government (principally Interior and Agriculture) have been evaluating potential practical applications, but operations and management do not fall singly in the mission of those departments. Many feel that current institutional and organizational policies are holding back the technology itself. These policies limit NASA's role to R&D while preferring full cost-benefit budgeting on the part of a number of agencies, each of which has an important but small interest in remote sensing.

Space applications involve far more than just a space platform with certain sensors and communication equipment aboard. All need to be considered in a system which includes a distribution net on earth, complex interaction with users, and transformation of data into a variety of forms of information to fit the needs of users. The ground side can be as complex and potentially as expensive as the space side. In remote sensing, the system developer and the user have remained separate in civilian applications. On the other hand, the military establishment and intelligence community have successfully put together and operated a number of systems--all of which display the essential feature of being integrated and global in scope.

In light of this situation, NASA has proposed establishing a National Data Service (NDS). Whereas in the past, NASA projects in remote sensing from space have proceeded on a disaggregated basis, NASA is now proposing an umbrella approach. As currently described by NASA, the NDS would give users access to cross-linked data banks. Data on geological, environmental, and other important terrestrial elements would be collected from conventional as well as from space platforms and would have diverse uses in both the public and the private sectors. Similarly, in public service communications the needed organization and managerial capability does not lie entirely in any department and therefore little is accomplished.

At issue in space applications is how to create the organizational framework to initiate projects with many users. Some Federal agency needs to play an active role in market aggregation as well as in the more traditional R&D activities. Private industry in the past has not served to initiate space applications programs. The private sector has tended to limit itself to making incremental improvements once a space system has been proven and to seeking operational rights for the system.

Issue #2--What should be NASA's role in space applications?

Option 1--Responsible for basic research, component development, and technical feasibility demonstration, with other agencies and the private sector responsible for any further exploitation or operations (current policy).

Option 2--Responsible for carrying individual space applications through full-scale demostration stage in order to assess social and economic benefits, identify and aggregate the user community, and provide adequate basis for decision on final operating responsibilities and modes by institutions other than NASA (requires no legislative or organizational action).

Option 3--Responsible, on a case-by-case basis, for developing, demonstrating, and then operating as a line agency selected space applications systems as public services or as reimbursable Federal enterprises (line operational role requires new legislation and may have organizational implications for other agencies).

Under Option 1 we would maintain our current policy. NASA would remain primarily a R&D mission agency. The private sector or line agencies would have to take the risk of demonstrating whether an operational application satellite would meet economic and mission criteria. NASA would not seek to expand its role in the implementation and operation of space application technologies. Under this approach NASA would continue long-term high-risk developments in remote sensing, communications, and navigational systems but not play an active role in market aggregation or the operation of satellite systems.

The advantages of Option 1 are: a) does not alter NASA's role in areas (i.e., operational) that have been primarily the province of other Federal agencies and the private sector; b) consistent with the OMB practice of requiring user agency funding policy and general practice of internalizing costs; and c) minimizes the emergence of programs without real users and without social or economic payoff.

The disadvantages of Option 1 are: a) keeps the US application efforts focused on R&D and retards demonstration and market aggregation; b) difficult transitions will rarely take place to users, either public or private; c) user agencies may duplicate NASA R&D for their own mission needs; and d) in the remote sensing area--which may be too big for industry to handle--the risk to industry might discourage their entry and thus lose for the country a potentially very significant benefit.

Under Option 2 NASA would carry individual applications satellite systems through full-scale demonstration. For LANDSAT, which will be discussed in more detail later, we would continue to make developmental improvements. As such we would leave open the option to designate LANDSAT an operational system while maintaining services during the R&D phase. Under this approach we would initiate the NASA proposal for a National Data Service as long as it was consistent with our overall natural resources objectives. This would give all users--governmental at the Federal or State level, private, and in other nations--an integrated data bank to draw on rather than develop duplicative capabilities for their own use. Option 2 could be implemented under the middle or high options of the preceding Issue #1.

The advantages to Option 2 are: a) where transition from R&D to operations is difficult, NASA would have the responsibility to make the transition work; b) provides one agency with clear responsibility in areas, without gaps in leadership; c) leaves open the option for other agency or private sector takeover in the future; d) may not require significant resource increases, only redirection of current assets; and e) requires NASA to be even more responsive to user needs.

The disadvantages to this approach are: a) if the developing agency cannot meet all user requirements the result may be a system that does not satisfy everyone; b) not being a user agency, NASA may find it difficult to make the optimum R&D choices; and c) even after transition to an operational program it may still be difficult to relinquish a full-scale demonstration program to the private sector or another operational agency.

Under Option 3 we would pursue all that was indicated under Option 2 but in addition NASA would become an operational as well as an R&D agency. If the Administration decided to pursue public service satellites, an institutional framework would be available. As such NASA would enlarge its horizons and concentrate its efforts where no established agency or private sector interest has emerged. NASA would need appropriate new legislation.

Advantages of Option 3 are: a) would stimulate activity in areas now falling between agencies; b) would give the US government a greater role in application satellites across the board; c) maintains a strong and positive thrust in space applications; and d) would assure improved space services for the US and the world.

The disadvantages of Option 3 are: a) programs could be initiated without established users; b) such an approach could become costly to maintain; c) it would require new legislation; and d) NASA could be accused of developing space capabilities for the sake of development and operation.

C. Specific Applications Issues

LANDSAT Operational Status. The present civil remote sensing satellites, such as LANDSAT, serve several different kinds of important US national interests. For LANDSAT, these include: 1) a means to learn about the earth on a global or regional basis; 2) national and social needs such as estimating crops, surveying geological resources, topographic mapping, and studying land use; 3) a global information system that will monitor the biosphere, particularly trends that affect the ability of the earth to support its growing populations; 4) a means to support US foreign policy; 5) maintaining US demonstrated leadership in a benign technology of obvious potential benefit; and 6) promoting private sector investment and economic payoff. Other experimental remote sensing systems are focused on oceanography, weather, climate, atmospheric pollution, and geodsey.

There is a strong interest in and demand for remote sensing data by many nations, especially developing countries. Furthermore, Japan, France, the European Space Agency, and the USSR are actively interested in the development

of remote sensing systems. At least some of these systems would use technology that is advanced compared to LANDSAT. US leadership could be eroded or lost unless the US plays an active international role. A US commitment to provide data to foreign LANDSAT ground stations at a fee, while legalistically limited to data from US experimental satellite systems, has resulted in foreign investments and expectations based on the assumption that LANDSAT or equivalent data will continue to be available.

Remote sensing systems, in general, are multi-purpose. Social and economic values arise from a wide variety of uses and are difficult to quantify. The beneficiaries are often the public at large or the general national interest, not solely the agencies making use of the information. There is no easy, precise, or equitable way of relating the value of the information product to the cost of producing it. As such, as in weather forecasting, economic or market criteria may not be the major factors in a government decision on remote sensing systems. Economic or market criteria, however, are a means of gauging the utility of certain classes of space systems.

Before making major investments in ground equipment and software, user interests require reasonable assurance on the specifications of remote sensing systems that will be available, and whether continuity will be maintained into the future. User lead times for operational preparations and lead times for providing the production and analysis services dictate the necessity of a long-term plan for data continuity.

Issue #3--How should the United States proceed with the further exploitation of its civil remote sensing activities?

Option 1--Continue experimentation and assessment of potential utility in a limited R&D environment (current policy).

Option 2--Declare it the intent of the United States to move rapidly to an operational remote sensing system with a commitment to both R&D and continuity of services at least through 1985 while the system is being established and implemented (no legislation or international agreement required).

Option 3--Declare the United States program in remote sensing operational now, with a commitment to provide continuity of operational services from 1985 on (may require legislation).

Under Option 1 we would limit NASA's involvement as presently is the case to new experiments and to making development improvements to experimental systems. We would defer the issue of establishing LANDSAT as operational. Under this approach we would establish an operational system when another Federal agency or the private sector was ready to take the initiative.

The advantages of Option 1 are: a) continues the tradition that operational functions are the province of operational agencies and the private sector; b) LANDSAT, still in the development stage, may not be mature enough to be made operational; c) this approach is consistent with the concept that user agencies should fund operational systems; and d) it would have NASA focus its efforts on long-term technology development problems.

The disadvantages of Option 1 are: a) sustains remote sensing, but only as a constantly changing research and development activity; b) user uncertainty about LANDSAT would continue as source of discontent; c) the risk is still too high for private sector entry; d) delays the ability to develop international arrangements; e) will continue to hamper effective utilization; f) encourages foreign competition in the technology; and g) does not assure that an operational agency would be selected and funded to exploit the LANDSAT system.

Under Option 2 we would remove the uncertainty for prospective users by declearing our intent to move toward an operational remote sensing system, with a commitment to continue to provide data from R&D satellites. As such we would still defer the decision on the operational question but support the notion of continuing the program until a user agency or the private sector would determine it was in its interest to take on the operational responsibility.

Advantages of Option 2 are: a) continues support for the program; b) would be consistent with the view that LANDSAT is still in need of development and is not ready for operational status; c) commits to the program to an extent that potential users can plan on the continued service; d) other than NASA, no user agency is ready to take an operational responsibility; and e) a policy commitment may be all that is needed at this time without a near-term budgetary impact.

Disadvantages of Option 2 are: a) continues to sidestep the issue for yet another period; b) retains the R&D thrust in LANDSAT and leaves the US remote sensing system as experimental; c) users will still not be aggregated in a way that appears necessary; and d) makes planning for international arrangements difficult.

Under Option 3 we would declare LANDSAT operational. Under this approach NASA would assume the operational responsibility if so decided under the management issue discussed previously. The emphasis would shift to meeting user needs.

Advantages of Option 3 are: a) we would put behind us this endless debate; b) the potential for transition to the private sector or a user agency are enhanced; c) the international users would sense the longer term commitment; d) focus would shift to user needs, something that will not happen under present development focus; e) the technology is available, limited only by national security restrictions on resolution; and f) planning could proceed for international arrangements.

The disadvantages of Option 3 are: a) LANDSAT may not be mature enough for operational capabilities even if in name only; b) the system could be frozen, far short of optimal design; and c) it is very difficult to guage costs versus benefits.

Other Issues. Other issues will arise in the years ahead which will be mentioned here. These include private sector investment and ownership of remote sensing satellites, internationalization of remote sensing satellites, a reexamination of the Open Skies concept, [illegible] role

in communications satellite R&D. These issues will be submitted separately when the timing is appropriate.

D. Aeronautics R&D

The Federal government has played a critical role in the development of this nation's civil aeronautics capabilities through government funding of aeronautics R&D. Two major forces have helped the United States industry reach its dominant position: 1) the Federal R&D has provided fundamental knowledge beyond the investment risk possibilities of the private sector; and 2) Defense requirements have created an enormous demand for technological performance. The United States has not chosen--as have so many nations--to sustai flag airlines and nationalized manufacturers. Rather, the United States has fostered private enterprise in this high-technology arena, restricting the Federal government's role to regulation and R&D.

In recent years both the airlines and the aircraft manufacturers have been forced to operate in a set of circumstances different from those existing over the previous two decades: 1) the rate of growth of domestic airline traffic has leveled off; 2) the cost of equipment has been rising rapidly because of inflation and the need to include technological advances in order to stay competitive; 3) the military subsidy of new airframe and engine development has declined as a result of a slower rate of introduction of new military aircraft and some divergence of military and civil airframe requirements; 4) competition has increased, especially from government subsidized enterprises in Europe; 5) public acceptance standards and government regulations continue to demand quieter and less polluting aircraft; and 6) fuel economy is becoming a critical cost parameter. Arguably, these changes might suggest a need to re-evaluate the role and level of government aeronautics R&D.

These are good reasons to maintain a strong research and development effort in this area. In the past NASA's programs have provided the continuing base of technical data which no private firm would be able to obtain on its own but which have been necessary to sustain a healthy, innovation, and competitive civilian industry. NASA also manages basic research and flight test facilities used by all manufacturers to test the soundness of their designs. Currently, 85 percent of the commercial aircraft in use in the non-Soviet block countries are US made and aerospace exports contribute $9 million a year to our balance of trade. The American share of the future world aircraft market--estimated at $50 billion in the next 10 years--depends on the quality of American aircraft. That depends in turn, in large measure, on the adequacy of NASA's R&D program.

Three fundamental questions need to be addressed:

- What should be the overall level of effort in aeronautics R&D? In the last few years the largest piece of the overall effort has been directed toward development of more energy-efficient engines. As this work nears completion the total program could decline or new initiatives could begin or be permitted to grow to take up the slack. In addition, sufficient projects await funding that the budget could grow substantially.

- Should greater effort be placed on basic and applied research? Over the last decade or so, the traditional emphasis on basic and applied research has gradually eroded under pressure from more short term needs. Many within the industry and academic community argue that it is time to alter the balance somewhat and again place greater emphasis on the long term research.

- Should NASA play a greater role (perhaps jointly with industry) in demonstrating and commercializing new technology? In light of the changes in the industry's business and regulatory environment outlined above and the reduced spin-off from military programs, some observers argue that US firms cannot remain competitive with publically owned or subsidized European manufacturers without greater downstream assistance from government. On the other hand such work is expensive, has traditionally been a private sector function and arguably can be best conducted without government help and interference. Moreover, it is not totally clear that more government support is sufficient to guarantee greater innovation and competitiveness.

Issue #4--What should be the level and orientation of NASA's aeronautics R&D program?

Option 1--Let the program decline as the fuel efficiency program reaches completion, with major emphasis on basic and applied research and only high priority development programs.

Option 2--Permit new program starts as the fuel efficiency program winds down with a greater emphasis on basic and applied research than currently. A strong development program would be maintained but only rarely would resources be allocated to high-priority demonstrations, systems work or prototyping.

Option 3--Permit the program to expand beyond Option 2 to accommodate greater work on demonstrations, system development and prototyping in those areas where social benefit would result but industry would not be expected to respond sufficiently on its own. (May require legislation.)

Under Option 1 we would sustain a more limited effort in aeronautical R&D focused primarily toward basic research activities. Generally, other government incentives--not R&D increases--would be relied on as stimulation for a more healthy industry that would be able to take up new technological advances competatively.

The advantages of Option 1 are: a) would reduce NASA's budget; b) restore greater emphasis to basic and applied research needed to the long term viability of the industry . The disadvantages of Option 1 are: a) runs the highest risk of leading to erosion of the competitiveness of US industry with possibly large long term impact on domestic employment and balance of trade.

Under Option 2 the aeronautical research and development program at NASA would continue generally on its present course. A periodic examination of programmatic issues would reveal desirable shifts in level of activity where useful technological advances could be demonstrated. Cost sharing with industry would be encouraged where feasible in high priority demonstrations identified, but the primary reliance would be on industry for prototyping and broad-scale demonstration and testing. Government incentives other than R&D would be counted on as stimulation for a more healthy industry that would be able to take up new technological advances competitively.

The advantages of Option 2 are: a) does not allow substantial increase in budget cost; b) maintains the level of effort at roughly current levels; c) provides enough funds to conduct broad-based R&D program; and d) permits occasional demonstration, systems or prototyping when very high pay-off can be identified. The disadvantages of Option 2 are: a) may not provide enough to assure competitiveness of US industry with the growing number of foreign contenders that are largely government supported; and b) more costly than Option 1.

Under Option 3 NASA's aeronautical R&D emphasis would shift to identified areas where private sector activities have been curtailed because of fiscal pressures on the industry; e.g., very large cargo aircraft, short haul aircraft, hypersonics, vertical takeoff and landing aircraft, and hybrid heavy-lift systems. The government would undertake appropriate prototype development initiatives with industrial financial support in selected areas where anti-trust laws preclude the pooling of development resources by the private sector. Through this effort we would attempt to maintain world aeronautical preeminence.

The advantages of Option 3 are: a) increased likelihood that US aircraft industry can maintain its position in world market over coming decades; b) provides increased support to aerospace industry; and c) would encourage more risk taking by the aerospace industry. The disadvantages of Option 3 are: a) high cost; b) alters traditional role of NASA nad results in greater government influence on aeronautics industry; c) not clear that more R&D or demonstration is the determining factor of industry innovativeness and competitiveness; d) might replace private funds by government funds.

E. Enumeration of Space Policy and Goals

Through the policy decisions you will reach on PRM-23 and the decisions reached in this review of civil space options, the Carter Administration can well describe the overall directions of national civil space program for the next decade. Together these decision memoranda will provide the basis for an Administration statement on space. The Congress and the public have been awaiting a more comprehensive elaboration of the Administration's view than has been made by you over the last year.

The space policy goals set forth in PRM-23--other than those related to intelligence--are:

- The United States is committed to the principles of the exploration and use of outer space by all nations for peaceful purposes and for the benefit of all mankind.

- The United States is committed to the exploration and use of outer space in support of its national well-being and policies.

- The United States rejects any claims to sovereignty over outer space or over celestial bodies, or any portion thereof, and rejects any limitations on the fundamental right to acquire data from space.

- The United States holds that the space systems of any nation are national property and have the right of passage through and operations in space without interference. Purposeful interference with operational space systems shall be viewed as an infringement upon sovereign rights.

- The United States will pursue activities in space in support of its right of self-defense and as such strengthen national secutiry, the deterrence of attack, and verification of arms control agreements.

- The United States will pursue space activities to increase scientific knowledge, develop useful civil applications of space technology, and maintain United States leadership in space so as to improve the market for space technology worldwide.

- The United States will conduct international cooperative space-related activities that are beneficial to the United States scientifically, politically, economically, and/or militarily.

In addition to policies described in PRM-23, this Administration has the opportunity to articulate near-term evolutionary goals as well as longer-term initiatives. The last Presidential statement concerning our goals in space was made by President Nixon when he announced the Shuttle program. We now are in the beginning of a new phase of our national space effort brought about by the completion of the Shuttle development and by decisions reached through the current deliberations. It would thus be possible to develop an elaborated statement of our civilian space policy and goals.

As such, these goals will reflect the broad policy direction and details of decisions reached in this document. The following sets forth a "menu" of general goals for the United States over the next decade. The goals we would actually describe would, of course, track your other budgetary and philosophical decisions.

- Maintain a vigorous, diversified, and broadly-based program of space exploration, research, and development, thereby improving man's understanding of earth's larger environment, including outer space.

- Improve the condition of human beings on earth through applications of space technology and provide improved services to the US and, where possible, to other nations.

- Improve space-related technologies and produce new technological options for present and future activities in space and on earth and strengthen the industrial, technological, and scientific capabilities of the US economy.

- Improve man's ability to work in and use space by continuing manned activity that systematically and progressively enlarges understanding of human adaptability to the space environment.

- Broaden participation in and financial support for the space program, particularly by encouraging non-governmental and public service by industry, business, and institutions.

- Encourage international cooperation of space exploration, research, and joint projects of benefit to mankind and further develop the international legal regime for the peaceful uses of space.

Issue #5--Should the Carter Administration release a public statement that elaborates our civilian space policy and goals?

Option 1--Public statement on our space policy derived from non-sensitive parts of PRM-23 and from decisions in this paper.

Option 2--No public statement.

The advantages of Option 1 are: a) it describes in detail the US civil space program over a time period we can best describe--the late 1970's and the 1980's; b) provides some budgetary constraint and does not raise expectations; and c) the longer-term goals will provide solace to a large segment of the population which is enthusiastic about space even though they know it is costly. The disadvantages of Option 1 are: a) will open for debate the appropriateness of the space policy described; and b) the longer term goals will be used by space advocates as indications of programmatic decisions.

The advantages of Option 2 are: a) makes the budgetary process the means by which the Administration articulates space policy; and b) avoids excessive positive signal during a period when it may be better to do without a public statement. The disadvantages of Option 2 are: a) sustains the debate whether this Administration has a space policy which it wishes to articulate; b) does not respond to Congressional interest in an Administration space policy; and c) encourages the press to speculate on US policy goals.

Summary of Issues

Issue No. 1

How should this administration express its broad civil space policy directions?

Option 1 Reduce systematically overall expenditures in the civil space program.

Option 2 With the run-out of the Shuttle development costs, use the released funds to initiate new starts in science, applications, and exploration when justifiable on their intrinsic merit. This overall program direction will be constrained to a level of effort not to exceed the current budget (allowing for inflation).

Option 3 Increase overall expenditures on space programs and consider favorably major new starts in planetary exploration, space sciences, applications, and technological initiatives.

Factors Bearing

- Funds available for Shuttle development may be constrained if the NASA budget is decreased.
- Intelligence coverage of Soviet space activity will become more important if NASA's space program is reduced. Any increase in tasking will tax our intelligence resources.
- NASA R&D contributes to the maintenance of the aerospace industrial base. Costs for certain intelligence systems could increase if NASA R&D decreases.
- Reductions in the NASA budget could be used to finance increases in the NFIP budget.
- Civil Remote sensing may be an important future contributor to economic intelligence.

NFIB Agency Positions

- No strong agency positions have been received. Option 2 preferred.

Issue No. 2

What should be NASA's role in space applications?

Option 1 Responsible for basic research, component development, and technical feasibility demonstration, with other agencies and the private sector responsible for any further exploitation or operations (current policy).

Option 2 Responsible for carrying individual space applications through full-scale demonstration stage in order to assess social and economic benefits, identify and aggregate the user community, and provide adequate basis for decision on final operating responsibilities and modes by institutions other than NASA (requires no legislative or organizational action).

Option 3 Responsible, on a case-by-case basis, for developing, demonstrating, and then operating as a line agency selected space applications systems as public services or as reimbursable Federal enterprises (line operational role requires new legislation and may have organizational implications for other agencies).

Factors Bearing

- Coordination on security, foreign policy impact, technology transfer, civil use of intelligence information, etc., will be more complicated if a large number of organizations become involved in space operations as is more likely under Options 1 and 2.

NFIB Agency Positions

- None.

Issue No. 3

How should the United States proceed with the further exploitation of its civil remote sensing activities?

Option 1 Continue experimentation and assessment of potential utility in a limited R&D environment (current policy).

Option 2 Declare it the intent of the United States to move rapidly to an operational remote sensing system with a commitment to both R&D and continuity of services at least through 1985 while the system is being established and implemented (no legislation or international agreement required).

Option 3 Declare the United States program in remote sensing operational now, with a commitment to provide continuity of operational services from 1985 on (may require legislation).

Factors Bearing

- Option 3 appears to imply a push toward higher resolution data to satisfy user's needs. We previously opposed this possibility in PRM-23.

NFIB Agency Positions

- None.

Other Issues

Other issues will arise in the years ahead which will be mentioned here. These include private-sector investment and ownership of remote sensing satellites, internationalization of remote sensing satellites, a reexamination of the "Open Skies" concept, and the future Federal role in communications satellite R&D. These issues will be submitted separately when the timing is appropriate.

Comment

- The issues mentioned above are of concern to the intelligence community and are likely to be highly contentious.

Issue No. 4

What should be the level and orientation of NASA's aeronautics R&D program?

Comment

- Not an intelligence community concern.

Issue No. 5

Should the Carter Administration release a public statement that elaborates our civilian space policy and goals?

Option 1 Public statement on our space policy derived from non-sensitive parts of PRM-23 and from decisions in this paper.

Option 2 No public statement.

Factors Bearing

- Security restrictions would preclude a balanced public statement
- Security probably better maintained with a public statement, but leaks are inevitable regardless.

NFIB Agency Positions

- None.